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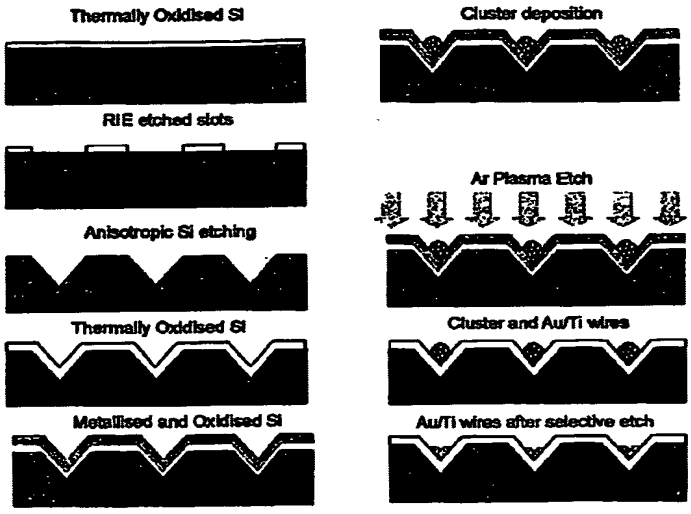
(54) Title: ETCH MASKS BASED ON TEMPLATE-ASSEMBLED NANOCLUSTERS



(57) Abstract: Nanoscale or mesoscale structures are fabricated on the surface of a substrate (e.g. silicon) by the aggregation of atomic clusters (e.g. antimony or bismuth) into V-grooves. These structures, preferably in the form of nanowires, are used as etching masks for the subsequent etching of the substrate. In an embodiment the V-grooves are metallised (e.g. with titanium or gold) prior to the deposition of the clusters. In this case the use of the nanostructures (e.g. antimony or bismuth) as an etching mask results in the formation of nanostructures of the underlying metal (e.g. titanium or gold). In this way the dimensions of the nanowires are transferred into the underlying metal film and the method allows fabrication of nanowires from materials (e.g. titanium or gold) that cannot be deposited as clusters.

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